Novel *Drosophila suzukii* (SWD) management tool: Decoy

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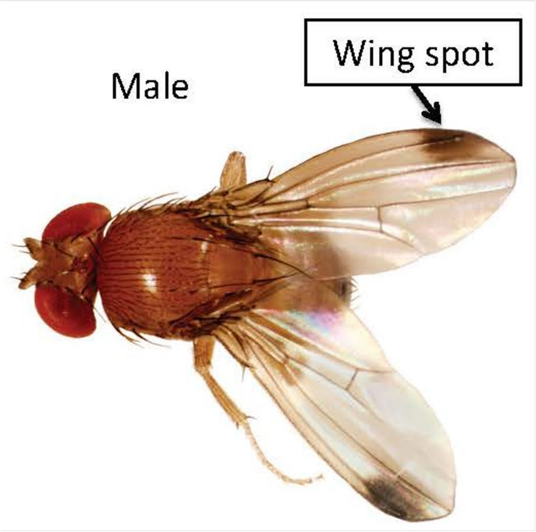
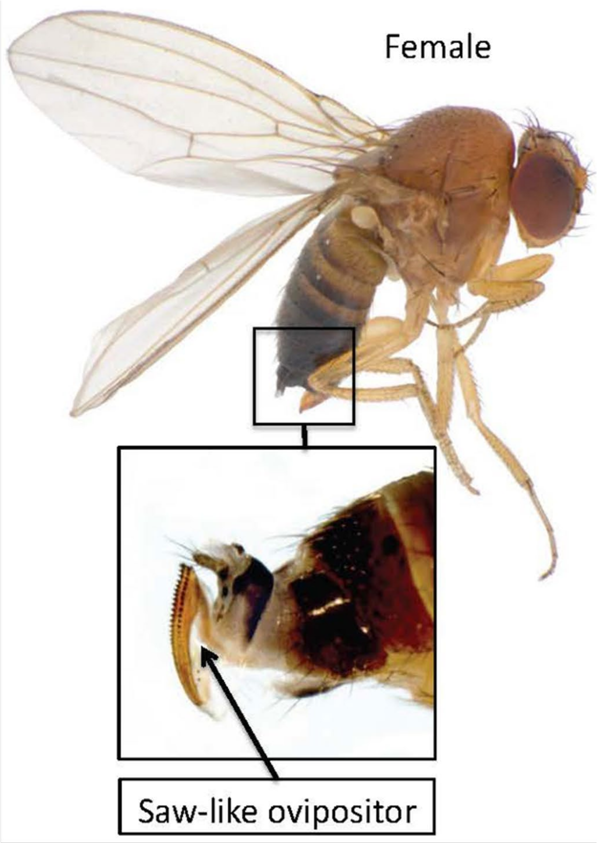
Worldwide Pest

- ***Drosophila suzukii*** (Matsumura, 1931)
- **>$500 million** in annual damages (Walsh, 2011)
- **Physical damage** → secondary infection
- Heavy reliance on **insecticides** for management

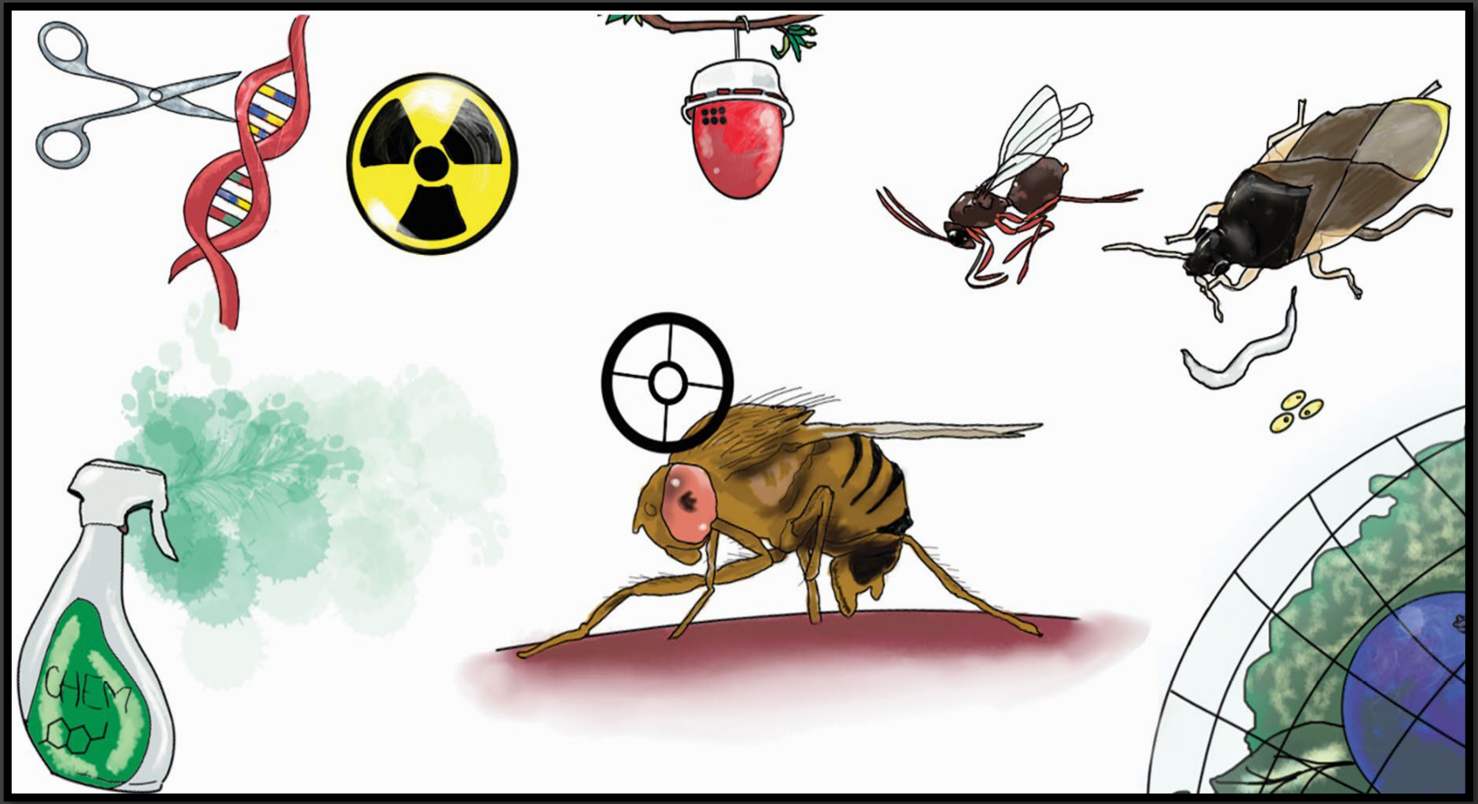




(Sial, 2022)

Walsh, D. B., Bolda, M. P., Goodhue, R. E., Dreves, A. J., Lee, J., Bruck, D. J., Walton, V. M., O'Neal, S. D., & Zalom, F. G. (2011). Drosophila suzukii (Diptera: Drosophilidae): invasive pest of ripening soft fruit expanding its geographic range and damage potential. *Journal of Integrated Pest Management, 2(1), G1-G7.*

SWD IPM

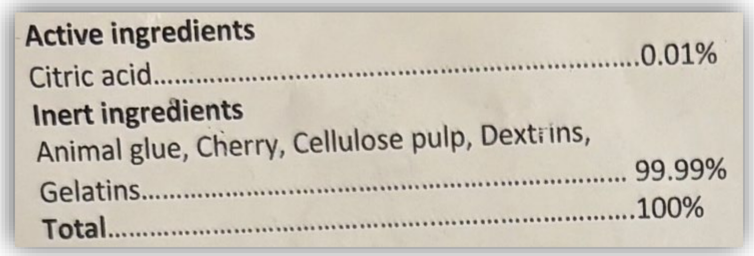


(Tait, 2021)

- Monitoring, identification, sanitation, biological control, and chemical control
- New organic product: **Decoy**

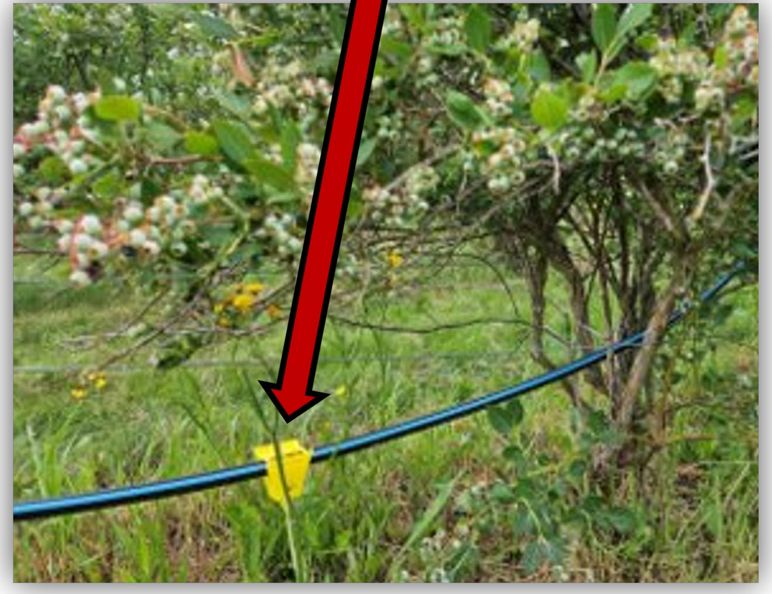
Decoy: Introduction

- Developed by OSU Walton Lab (~2018): product commercially available through TerrAmor
- Food grade gum bait – concentrated fatty acids from cherry
- Can be used in organic
- Behavioral disruption
- Replace every 2 weeks



Active ingredients
Citric acid..0.01%
Inert ingredients
Animal glue, Cherry, Cellulose pulp, Dextrins,
Gelatins..99.99%
Total..100%

(Nottingham, 2024)



(Nottingham, 2024)

Past Studies

Lab

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A food-grade gum as a management tool for *Drosophila suzukii*

Gabriella TAIT[1,2,3], Clive KAISER[3], M. Valerio ROSSI-STACCONI[3], Daniel T. DALTON[3], Gianfranco ANFORA[1,4], Vaughn M. WALTON[3]
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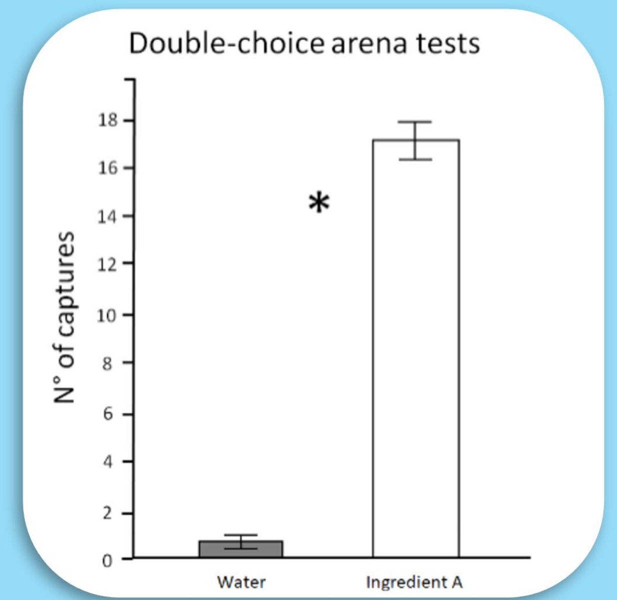
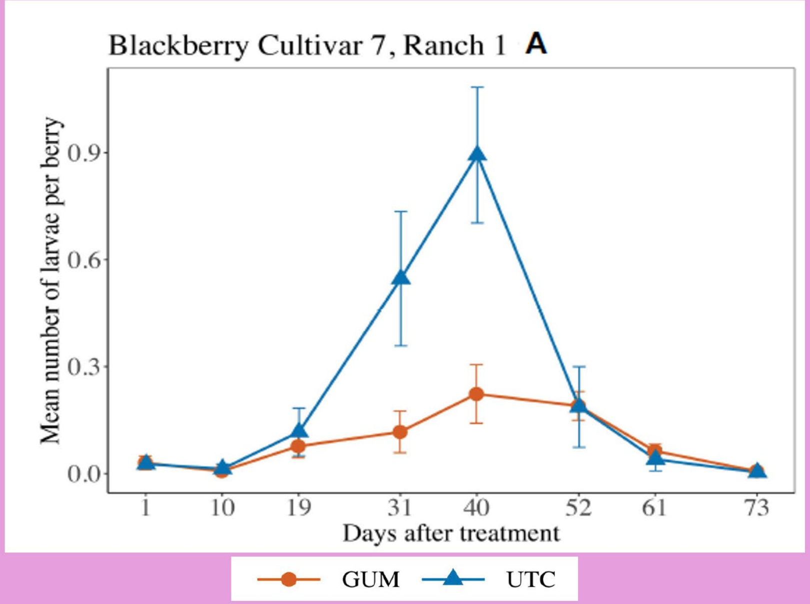


Field

Open field trials of food-grade gum in California and Oregon as a behavioral control for *Drosophila suzukii* Matsumura (Diptera: Drosophilidae)

Gabriella Tait[1*], Tingyu Zhu[2], Jimmy Klick[3], Fatemeh Ganjisaffar[4], Claira Castillo[3], Ryan Kennedy[3], Hillary Thomas[5], Christopher Adams[6], Ferdinand Pfab[7], Serhan Mermer[1], Enrico Mirandola[8], Lan Xue[2], Frank G. Zalom[4], Michael Seagraves[3] and Vaughn M. Walton[1]



WSU Trials: Decoy Field Trial - 2023

- **1 blueberry** field & **1 raspberry** field: untreated organic fields
- Did **not** significantly reduce SWD fruit infestations, but trending in the right direction
- **Future directions** → increase number of replications, test multiple rates, & use fields with low-medium pest pressure.

Raspberry (reps=2)

Blueberry (rep=3)

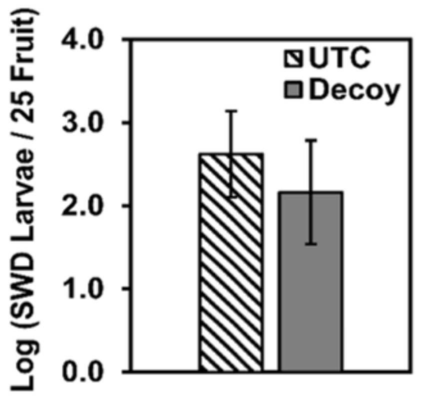


Fig. 3. SWD infestation levels (avg. larvae/25 fruit ± SEM) in 2-acre plots treated with Decoy or untreated.

(Nottingham, unpublished)

WSU Trials: Decoy Lab Choice Test - 2024

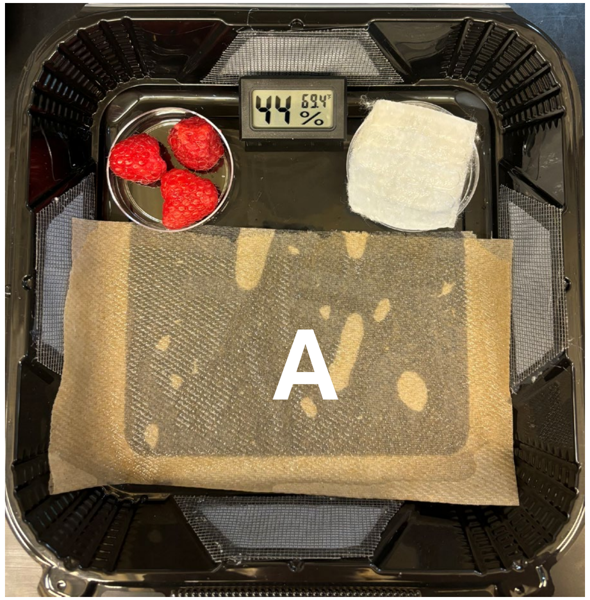
Before field trials...

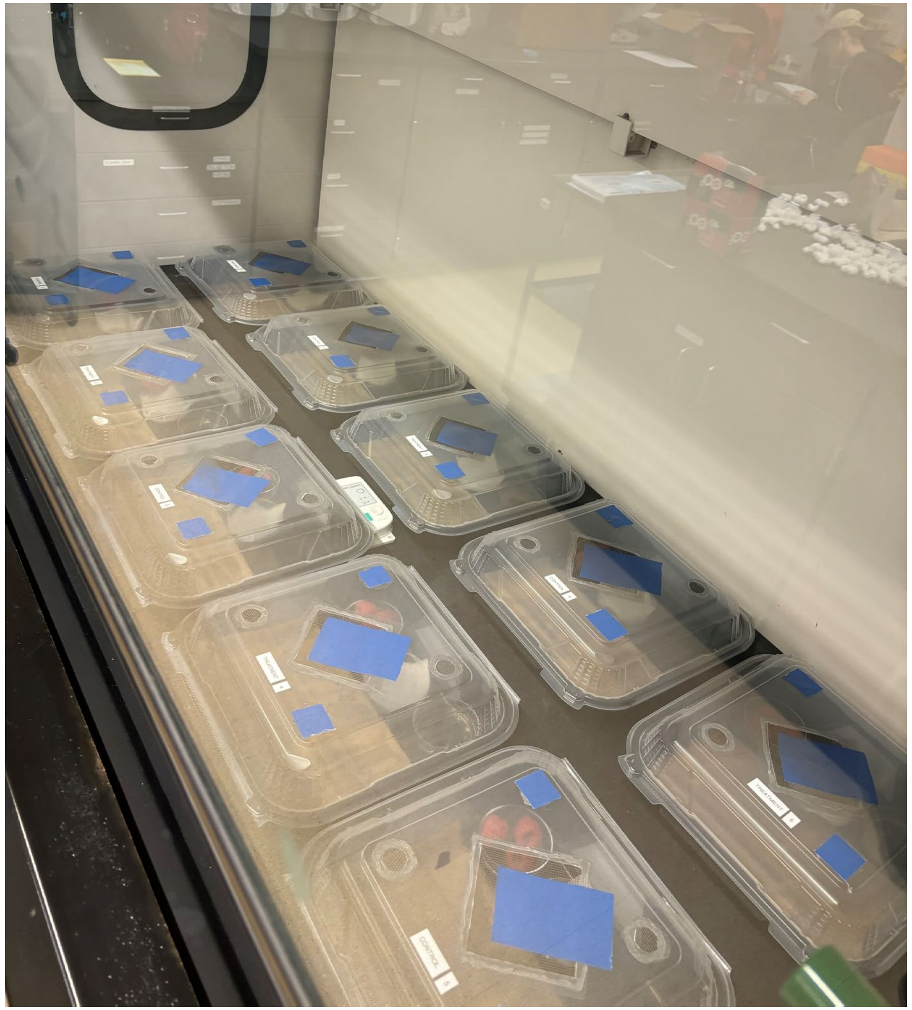
- 5 reps, 3 runs (2 with blueberry, 1 with raspberry)
- 9 F + 3M flies

Treatments:

A. Fruit

B. Decoy + Fruit





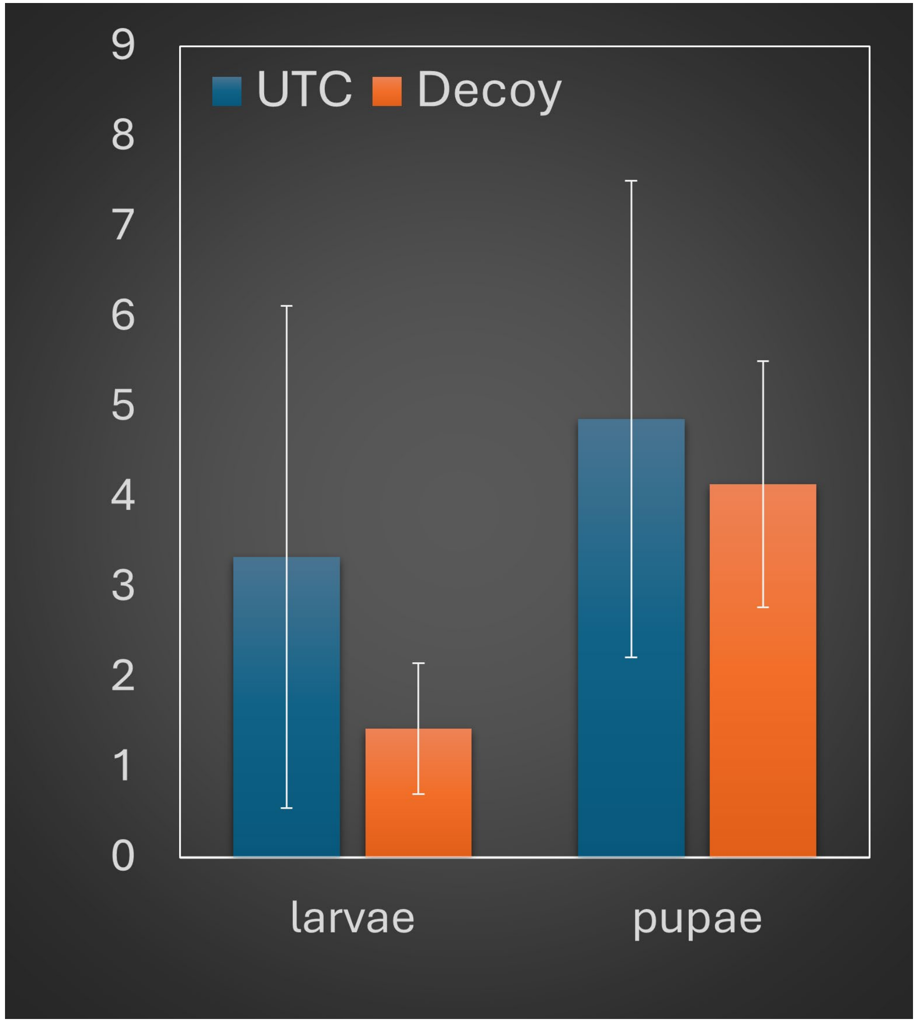
WSU Trials: Decoy Lab Choice Test - 2024

Results

- High variability between reps
- No significant reduction in infestation, but trending in right direction

Pupa in blueberry

Larva in blueberry



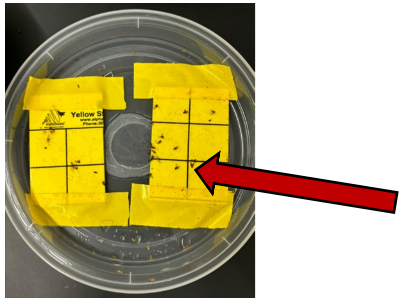
WSU Trials: Organic blueberry field - 2024

- Treatments:
  - **A** – control
  - **B** – standard rate (50/acre)
  - **C** – double rate (100/acre)

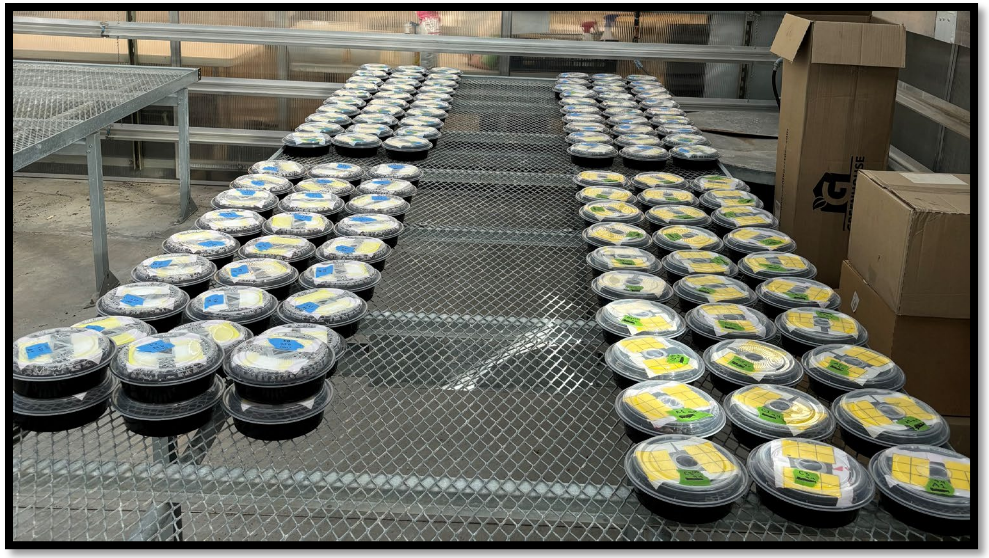
B5	**A4**	**C3**	**B2**	**C1**
A5	**C4**	**B3**	**A2**	**B1**
C5	**B4**	**A3**	**C2**	**A1**

~20 acres, 5 reps

- 100-200 berry samples once a week → incubation containers
- Berry dissections: larvae, pupae, & adult counts



Yellow sticky cards to catch adult fly emergence



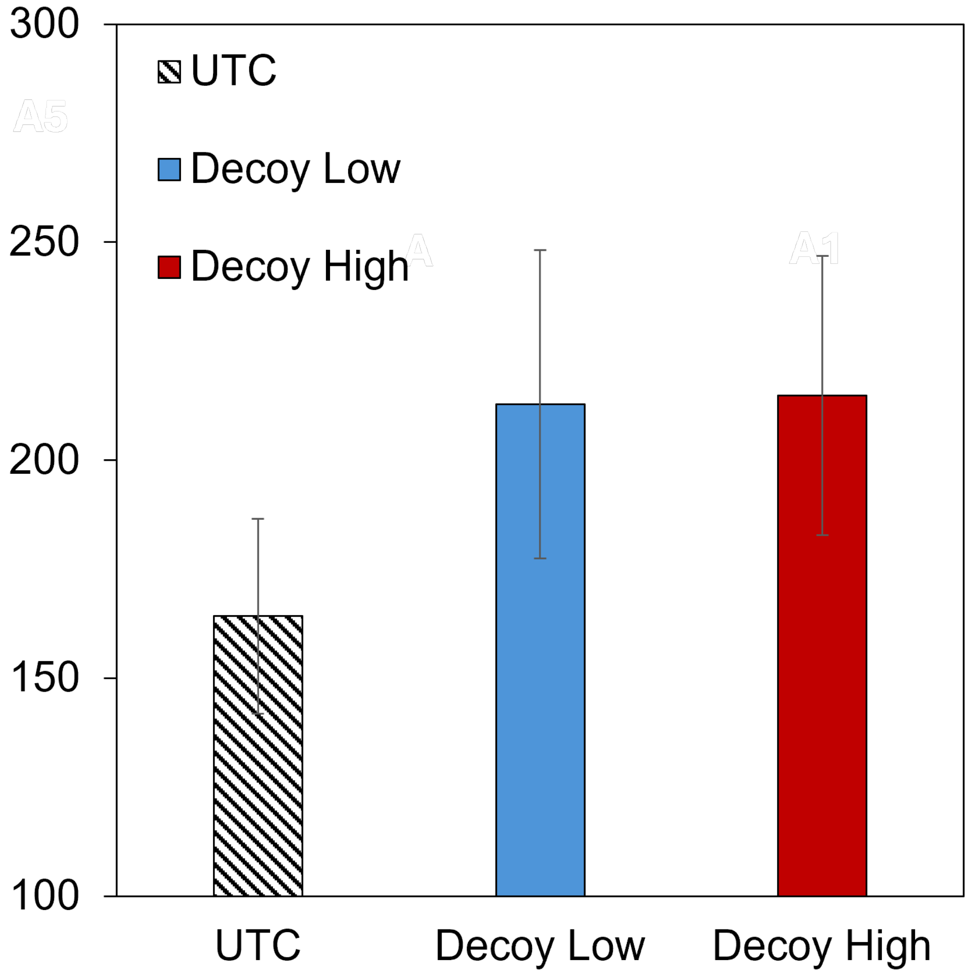
WSU Trials: Organic blueberry field - 2024

Results

- 1st fly emergence on Sep. 12th
- Control plots had least amount of fly emergence!
- Still processing data

Future directions:

- need more testing to find the ideal rate, timing, water requirements, environment, etc.
- Change experimental design



Thank you!

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Thank you to my fellow Nottingham lab members
for all your amazing help this past year!

Washington Blueberry Commission

Washington Commission on Integrated Pest Management

TerrAmor